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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/566,355

01/30/2006

Yutaka Yamagata

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04/11/2008

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EXAMINER

DAVIS, OCTAVIA L

ART UNIT

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2855

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DELIVERY MODE

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/566,355	Applicant(s) YAMAGATA ET AL.	
	Examiner OCTAVIA DAVIS	Art Unit 2855	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 1/15/08.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-15 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1, 2 and 4 - 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bashir et al (6,935,165) in view of Haritonidis et al (4,896,098).

Regarding claim 1, Bashir et al disclose a microscale sensor element and related device and method of use comprising a minute mechanical structure body 106 having a functional membrane 110 formed at least on one part of its surface, supporting means 102 for supporting the minute mechanical structure body 106 and detection means 108 for detecting the change of a mechanical property of the minute mechanical structure body (See Col. 24, lines 44 – 54) but does not disclose that the body comprises two arms connected to a supporting portion of the minute mechanical structure body. However, Haritonidis et al disclose a microsensor 12 having two arms 16 connected to a supporting portion 19 of the microsensor body (See Col. 6, lines 11 – 21, Figs. 2 and 3).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Bashir et al according to the teachings of Haritonidis et al for the purpose of, advantageously providing an extremely small shear stress sensor which

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substantially reduces the problems of pressure gradient across the floating sensor, gap flow and scale resolution (See Haritonidis et al, Col. 2, lines 33 - 38).

Regarding claim 2, in Bashir et al, the minute structure body 106 is provided on an upper surface of the supporting means 102 and the functional membrane 110 is capable of being deposited in thin layers on each structure body (See Col. 18, lines 5 – 14).

Regarding claim 4, in Bashir et al, the functional membrane 110 is made of a polymeric material (See Col. 24, lines 51 – 54).

Regarding claims 5 and 6, in Bashir et al, the functional membrane 110 is formed directly on a surface of the minute structure body 106 by deposition (See Col. 20, lines 40 – 42, Col. 21, lines 66 – 67 and Col. 22, lines 1 – 6).

“[E]ven though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process.” In re Thorpe, 777 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985).

Since the product in claims 5 and 6 is a deposited membrane, and such a deposited membrane is disclosed by Bashir et al, the claim is unpatentable even though made by a different process. See MPEP 2113.

Regarding claim 7, in Bashir et al, the detection means 108 comprises a zone which will not be displaced or displaced negligibly even when a mechanical property of the functional membrane is changed, and the minute structure body has its one end immersed into a test solution such that said zone is close to the surface of the test solution.

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Regarding claims 8, 9 and 13 - 15, in Bashir et al, the detection means detects a deformation due to the stress on the cantilever (See Col. 22, lines 34 – 52 and Col. 24, lines 44 - 54) and the functional membrane 110 includes an environmentally sensitive configuration which changes in accordance with the presence and absence of an environmental parameter, wherein the change or swelling of the functional membrane results in the actuation of the structure body 106 (See Col. 24, lines 19 – 24).

Regarding claims 10 – 12, in Bashir et al, the minute mechanical structure body 106 comprises a minute cantilever having the functional membrane or layer 110 formed thereon and the detection means 108 is a sensor capable of detecting the bending deformation of the minute cantilever of the minute mechanical structure body (See Col. 24, lines 44 – 54).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bashir et al and Haritonidis et al, as applied to claims 1, 2 and 4 – 15 above, and further in view of Lang et al “An artificial nose based on a micromechanical cantilever array”.

Regarding claim 3, Bashir et al and Haritonidis et al disclose all of the limitations of these claims except that a plurality of minute structure bodies are provided and each structure comprises a different functional membrane. However, in Lange et al, a microfabricated array of silicon cantilevers is provided wherein each is coated with a specific

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and different sensor layer which transduces a chemical reaction into a mechanical response, the specific sensor layer including metals, monolayers or polymers (See the "Introduction" section on Page 1).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Bashir et al and Haroitonidis et al according to the teachings of Lang et al for the purpose of, advantageously providing a novel chemical sensor based on a micromechanical array of silicon cantilevers having different cantilever coatings to allow the operation of the array device as a new form of chemical nose (See the abstract of Lang et al, lines 4 and 5).

Response to Arguments

5. Applicant's arguments with respect to these claims have been considered but are moot in view of the new grounds of rejection.

Applicant's amendment necessitated the new grounds of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action.

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In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Conclusion

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Heiserman (4,666,198) discloses a piezoelectric polymer microgripper.

Pister (5,726,480) discloses etchants for use in micromachining of cmos microaccelerometers and microelectromechanical devices and method of making the same.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Octavia Davis whose telephone number is 571-272-2176. The examiner can normally be reached on Mon through Thurs from 9 to 5. The examiner can also be reached on alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward Lefkowitz, can be reached on 571-272-2180. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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/Edward Lefkowitz/
Supervisory Patent Examiner, Art Unit 2855

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4/9/08